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L9: ANSWER 1 OF 2: HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:5525 HCAPLUS  
 DOCUMENT NUMBER: 138:61392  
 TITLE: Composite **scaffold** with a fixation device  
 for the repair and regeneration of tissue  
 INVENTOR(S): Brown, Kelly R.; Zimmerman, Mark C.  
 ; Li, Yufu  
 PATENT ASSIGNEE(S): Ethicon, Inc., USA  
 SOURCE: U.S. Pat. Appl. Publ., 12 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003004578	A1	20030102	US 2001-893813	20010628
EP 1277450	A2	20030122	EP 2002-254534	20020627

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

PRIORITY APPLN. INFO.: US 2001-893813 A 20010628

AB A prosthetic implant having a tissue **scaffold** and a fixation device with a **scaffold** support and an anchoring post. The anchoring post extends from a surface of the **scaffold** support at a selected angle with the **scaffold** support embedded within the **scaffold**. The **scaffold** has a porous ceramic phase and a porous polymer phase. The polymer is foamed while in soln. that is infused in the pores of the ceramic to create a interphase junction of interlocked porous materials and embedding the **scaffold** support portion of the fixation device. The preferred method for foaming is by lyophilization. The **scaffold** may be infused or coated with a variety of bioactive materials to induce ingrowth or to release a medicament. The multilayered porous **scaffold** can mimic the morphol. of an injured tissue junction with a gradient morphol. and cell compn. A soln. of the polymer to be lyophilized into a foam was prepd., composed of a 95/5 wt. ratio of 1,4-dioxane to 35/65 PCL/PGA (.epsilon.-caprolactone-glycolide copolymer). The soln. was heated and the soln. was filtered. A ceramic tablet of porous hydroxyapatite was fabricated. A bioabsorbable fixation component was manufd. by using an injection molding process. The polymer used to manuf. the fixation components was a copolymer of 85% PLA and 15% PGA (85/15 PLA/PGA). The fixation component proposed by the foregoing process was threaded through the 2-mm hole prefabricated in the ceramic tablet.

IT 1305-78-8, Calcium oxide, biological studies 1306-05-4, Fluorapatite (Ca<sub>5</sub>F(PO<sub>4</sub>)<sub>3</sub>) 1306-06-5, Hydroxyapatite 7757-87-1 7758-87-4, Tricalcium phosphate 7778-18-9, Calcium sulfate 7789-75-5, Calcium fluoride, biological studies 10103-46-5, Calcium phosphate 13767-12-9, Tetracalcium phosphate  
 RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (ceramic; composite **scaffold** with fixation device for repair and regeneration of tissue)

RN 1305-78-8 HCAPLUS  
 CN Calcium oxide (CaO) (9CI) (CA INDEX NAME)

Ca=O

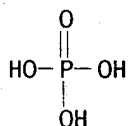
RN 1306-05-4 HCAPLUS  
 CN Fluorapatite (Ca<sub>5</sub>F(PO<sub>4</sub>)<sub>3</sub>) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
Ca	5	7440-70-2

RN 1306-06-5 HCAPLUS  
 CN Hydroxylapatite (Ca<sub>5</sub>(OH)(PO<sub>4</sub>)<sub>3</sub>) (9CI) (CA INDEX NAME)

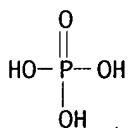
Component	Ratio	Component Registry Number
HO	1	14280-30-9
O4P	3	14265-44-2
Ca	5	7440-70-2

RN 7757-87-1 HCAPLUS  
 CN Phosphoric acid, magnesium salt (2:3) (8CI, 9CI) (CA INDEX NAME)



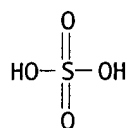
3/2 Mg

RN 7758-87-4 HCAPLUS  
 CN Phosphoric acid, calcium salt (2:3) (8CI, 9CI) (CA INDEX NAME)



3/2 Ca

RN 7778-18-9 HCAPLUS  
 CN Sulfuric acid, calcium salt (1:1) (8CI, 9CI) (CA INDEX NAME)

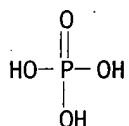


O Ca

RN 7789-75-5 HCAPLUS  
CN Calcium fluoride (CaF<sub>2</sub>) (9CI) (CA INDEX NAME)

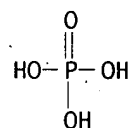
F—Ca—F

RN 10103-46-5 HCAPLUS  
CN Phosphoric acid, calcium salt (8CI, 9CI) (CA INDEX NAME)



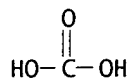
Ox Ca

RN 13767-12-9 HCAPLUS  
CN Phosphoric acid, calcium salt (3:4) (8CI, 9CI) (CA INDEX NAME)



O4/3 Ca

IT 471-34-1, Calcium carbonate, biological studies 30846-39-0  
 , Glycolide-L-lactide copolymer 41706-81-4, .epsilon.-  
 Caprolactone-glycolide copolymer 65408-67-5,  
 .epsilon.-Caprolactone-L-lactide copolymer 80137-67-3,  
 .epsilon.-Caprolactone-lactic acid copolymer 129771-65-9,  
 .epsilon.-Caprolactone-D-lactide copolymer  
 RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological  
 study); USES (Uses)  
 (composite **scaffold** with fixation device for repair and  
 regeneration of tissue)  
 RN 471-34-1 HCAPLUS  
 CN Carbonic acid calcium salt (1:1) (8CI, 9CI) (CA INDEX NAME)



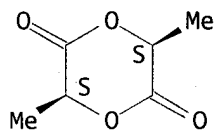
Ca

RN 30846-39-0 HCAPLUS  
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with  
 1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

CM 1

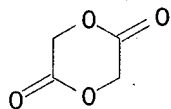
CRN 4511-42-6  
 CMF C6 H8 O4

Absolute stereochemistry.



CM 2

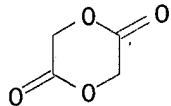
CRN 502-97-6  
 CMF C4 H4 O4



RN 41706-81-4 HCAPLUS  
 CN 1,4-Dioxane-2,5-dione, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

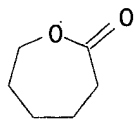
CM 1

CRN 502-97-6  
 CMF C4 H4 O4



CM 2

CRN 502-44-3  
 CMF C6 H10 O2

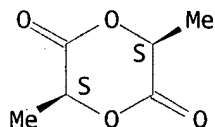


RN 65408-67-5 HCAPLUS  
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

CM 1

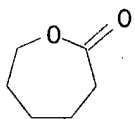
CRN 4511-42-6  
 CMF C6 H8 O4

Absolute stereochemistry.



CM 2

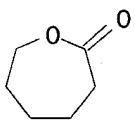
CRN 502-44-3  
 CMF C6 H10 O2



RN 80137-67-3 HCAPLUS  
 CN Propanoic acid, 2-hydroxy-, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

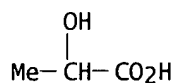
CM 1

CRN 502-44-3  
 CMF C6 H10 O2



CM 2

CRN 50-21-5  
 CMF C3 H6 O3



RN 129771-65-9 HCAPLUS

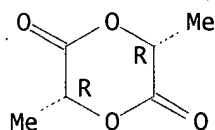
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3R,6R)-, polymer with 2-oxepanone  
(9CI) (CA INDEX NAME)

CM 1

CRN 13076-17-0

CMF C6 H8 O4

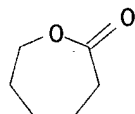
Absolute stereochemistry.



CM 2

CRN 502-44-3

CMF C6 H10 O2

IT 1398-61-4, Chitin 9004-61-9, Hyaluronic acid  
9005-32-7, Alginate acidRL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(composite **scaffold** with fixation device for repair and  
regeneration of tissue)

RN 1398-61-4 HCAPLUS

CN Chitin (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 9004-61-9 HCAPLUS

CN Hyaluronic acid (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 9005-32-7 HCAPLUS

CN Alginate acid (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM A61F002-02

NCL 623023720; 623023760

CC 63-7 (Pharmaceuticals)

ST composite **scaffold** fixation device ceramic polyester;  
tissue regeneration repair polyester ceramic

- IT Polyesters, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(aliph.; composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Polyesters, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(caprolactone-glycolide; composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Polyesters, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(caprolactone-lactic acid; composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Polyesters, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(caprolactone-lactide; composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Animal tissue  
Freeze drying  
Interface  
Nonwoven fabrics  
Textiles  
(composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Polyester rubber  
Polymers, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Collagens, biological studies  
Elastins  
Growth factors, animal  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Prosthetic materials and Prosthetics  
(composites, implants; composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Polyesters, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(dilactone-based; composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Drug delivery systems  
Prosthetic materials and Prosthetics  
(implants; composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT Molding of plastics and rubbers  
(injection; composite **scaffold** with fixation device for repair and regeneration of tissue)
- IT 1305-78-8, Calcium oxide, biological studies 1306-05-4, Fluorapatite (Ca<sub>5</sub>F(PO<sub>4</sub>)<sub>3</sub>) 1306-06-5, Hydroxyapatite 7757-87-1 7758-87-4, Tricalcium phosphate 7778-18-9, Calcium sulfate 7789-75-5, Calcium fluoride, biological studies 10103-46-5, Calcium phosphate 13767-12-9, Tetracalcium phosphate

RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(**ceramic**; composite **scaffold** with fixation device for repair and regeneration of tissue)

IT 471-34-1, Calcium carbonate, biological studies 30846-39-0

, Glycolide-L-lactide copolymer 41706-81-4, .epsilon.-

Caprolactone-glycolide copolymer 65408-67-5,

.epsilon.-Caprolactone-L-lactide copolymer 80137-67-3,

.epsilon.-Caprolactone-lactic acid copolymer 129771-65-9,

.epsilon.-Caprolactone-D-lactide copolymer

RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(composite **scaffold** with fixation device for repair and regeneration of tissue)

IT 1398-61-4, Chitin 9004-61-9, Hyaluronic acid

9005-32-7, Alginic acid

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(composite **scaffold** with fixation device for repair and regeneration of tissue)



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L9 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:5239 HCAPLUS

DOCUMENT NUMBER: 138:61423

TITLE: Porous ceramic/porous polymer layered  
scaffolds for the repair and regeneration of  
tissueINVENTOR(S): Brown, Kelly R.; Yuan, Jenny J.;  
Li, Yufu; Zimmerman, Mark C.

PATENT ASSIGNEE(S): Ethicon, Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 17 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003003127	A1	20030102	US 2001-892993	20010627
EP 1270025	A2	20030102	EP 2002-254457	20020626
EP 1270025	A3	20030326		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

PRIORITY APPLN. INFO.: US 2001-892993 A 20010627

AB A composite scaffold with a porous ceramic phase and a porous polymer phase. The polymer is foamed while in soln. that is infused in the pores of the ceramic to create a interphase junction of interlocked porous materials. The preferred method for foaming is by lyophilization. The scaffold may be infused or coated with a variety of bioactive materials to induce ingrowth or to release a medicament. The multi-layered porous scaffold can mimic the morphol. of an injured tissue junction with a gradient morphol. and cell compn., such as articular cartilage. A bilayered scaffold is comprised of a porous polymer phase (caprolactone-dioxanone copolymer) and porous ceramic phase.

IT 41706-81-4P, Caprolactone-glycolide copolymer

RL: DEV (Device component use); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)

(porous ceramic/porous polymer layered scaffolds  
for the repair and regeneration of tissue)

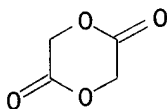
RN 41706-81-4 HCAPLUS

CN 1,4-Dioxane-2,5-dione, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

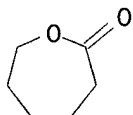
CMF C4 H4 O4



CM 2

CRN 502-44-3

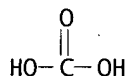
CMF C6 H10 O2



IT 471-34-1, Calcium carbonate, biological studies 1305-78-8  
 , Calcium oxide, biological studies 1306-01-0, Tetracalcium  
 phosphate 1306-05-4, Fluorapatite (Ca5F(P04)3) 1306-06-5  
 , Hydroxyapatite 1398-61-4, Chitin 7758-87-4,  
 Tricalcium phosphate 7778-18-9, Calcium sulfate  
 7789-75-5, Calcium fluoride, biological studies 9004-61-9  
 , Hyaluronic acid 9005-32-7, Alginic acid 25618-23-9,  
 Calcium magnesium phosphate 65408-67-5, Caprolactone-L-lactide  
 copolymer 70524-20-8, Caprolactone-lactide copolymer  
 129771-65-9, 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3R,6R)-,  
 polymer with 2-oxepanone  
 RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological  
 study); USES (Uses)  
 (porous ceramic/porous polymer layered scaffolds  
 for the repair and regeneration of tissue)

RN 471-34-1 HCAPLUS

CN Carbonic acid calcium salt (1:1) (8CI, 9CI) (CA INDEX NAME)



Ca

RN 1305-78-8 HCAPLUS

CN Calcium oxide (CaO) (9CI) (CA INDEX NAME)

Ca=O

RN 1306-01-0 HCAPLUS

CN Calcium oxide phosphate (Ca40(P04)2) (7CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	2	14265-44-2
Ca	4	7440-70-2

RN 1306-05-4 HCAPLUS

CN Fluorapatite (Ca5F(P04)3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
Ca	5	7440-70-2

RN 1306-06-5 HCAPLUS

CN Hydroxylapatite (Ca5(OH)(PO4)3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1	14280-30-9
O4P	3	14265-44-2
Ca	5	7440-70-2

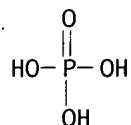
RN 1398-61-4 HCAPLUS

CN Chitin (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 7758-87-4 HCAPLUS

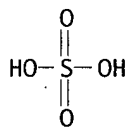
CN Phosphoric acid, calcium salt (2:3) (8CI, 9CI) (CA INDEX NAME)



3/2 Ca

RN 7778-18-9 HCAPLUS

CN Sulfuric acid, calcium salt (1:1) (8CI, 9CI) (CA INDEX NAME)



Ca

RN 7789-75-5 HCAPLUS

CN Calcium fluoride (CaF2) (9CI) (CA INDEX NAME)

F—Ca—F

RN 9004-61-9 HCAPLUS

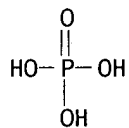
CN Hyaluronic acid (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 9005-32-7 HCAPLUS  
 CN Alginic acid (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 25618-23-9 HCAPLUS  
 CN Phosphoric acid, calcium magnesium salt (8CI, 9CI) (CA INDEX NAME)



x Ca

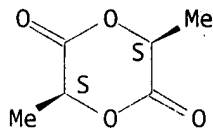
x Mg

RN 65408-67-5 HCAPLUS  
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

CM 1

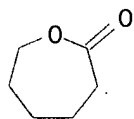
CRN 4511-42-6  
 CMF C6 H8 O4

Absolute stereochemistry.



CM 2

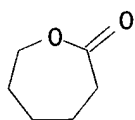
CRN 502-44-3  
 CMF C6 H10 O2



RN 70524-20-8 HCAPLUS  
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

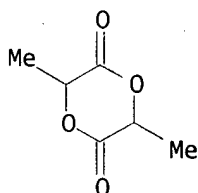
CM 1

CRN 502-44-3  
CMF C6 H10 O2



CM 2

CRN 95-96-5  
CMF C6 H8 O4

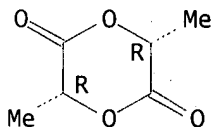


RN 129771-65-9 HCAPLUS  
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3R,6R)-, polymer with 2-oxepanone  
(9CI) (CA INDEX NAME)

CM 1

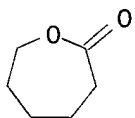
CRN 13076-17-0  
CMF C6 H8 O4

Absolute stereochemistry.



CM 2

CRN 502-44-3  
CMF C6 H10 O2



IC ICM A61K031-74  
NCL 424423000  
CC 63-8 (Pharmaceuticals)

- ST composite polymer ceramic porous scaffold tissue
- IT Cartilage  
(articular; porous ceramic/porous polymer layered scaffolds for the repair and regeneration of tissue)
- IT Prosthetic materials and Prosthetics  
(composites; porous ceramic/porous polymer layered scaffolds for the repair and regeneration of tissue)
- IT Spinal column  
(disks; porous ceramic/porous polymer layered scaffolds for the repair and regeneration of tissue)
- IT Polyesters, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(lactone-based; porous ceramic/porous polymer layered scaffolds for the repair and regeneration of tissue)
- IT Animal tissue  
Meniscus  
(porous ceramic/porous polymer layered scaffolds for the repair and regeneration of tissue)
- IT Collagens, biological studies  
Elastins  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(porous ceramic/porous polymer layered scaffolds for the repair and regeneration of tissue)
- IT 41706-81-4P, Caprolactone-glycolide copolymer  
RL: DEV (Device component use); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(porous ceramic/porous polymer layered scaffolds for the repair and regeneration of tissue)
- IT 471-34-1, Calcium carbonate, biological studies 1305-78-8, Calcium oxide, biological studies 1306-01-0, Tetracalcium phosphate 1306-05-4, Fluorapatite (Ca<sub>5</sub>F(PO<sub>4</sub>)<sub>3</sub>) 1306-06-5, Hydroxyapatite 1398-61-4, Chitin 7758-87-4, Tricalcium phosphate 7778-18-9, Calcium sulfate 7789-75-5, Calcium fluoride, biological studies 9004-61-9, Hyaluronic acid 9005-32-7, Alginic acid 25618-23-9, Calcium magnesium phosphate 65408-67-5, Caprolactone-L-lactide copolymer 70524-20-8, Caprolactone-lactide copolymer 129771-65-9, 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3R,6R)-, polymer with 2-oxepanone  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(porous ceramic/porous polymer layered scaffolds for the repair and regeneration of tissue)

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(FILE 'HOME' ENTERED AT 16:15:13 ON 28 MAR 2003)

FILE 'HCAPLUS' ENTERED AT 16:15:21 ON 28 MAR 2003

L1 289 S ZIMMERMAN M?/AU  
L2 2621 S BROWN K?/AU  
L3 25503 S LI Y?/AU  
L4 2308 S YUAN J?/AU  
L5 30684 S L1-4  
L6 527 S L5 AND CERAMIC  
L7 2 S L6 AND SCAFFOLD  
SELECT RN L7 1-2

FILE 'REGISTRY' ENTERED AT 16:16:30 ON 28 MAR 2003

L8 21 S E1-21

FILE 'HCAPLUS' ENTERED AT 16:16:41 ON 28 MAR 2003

L9 2 S L8 AND L7